

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference A4-327PCT	FOR FURTHER ACTION	
See Form PCT/IPEA/416		
International application No. PCT/US2005/000695	International filing date (<i>day/month/year</i>) 10.01.2005	Priority date (<i>day/month/year</i>) 09.01.2004
International Patent Classification (IPC) or national classification and IPC H01R13/24		
Applicant MOLEX INCORPORATED		
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (<i>sent to the applicant and to the International Bureau</i>) a total of 3 sheets, as follows:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions). <input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box. <p>b. <input type="checkbox"/> (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>		
<p>4. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Box No. I Basis of the opinion <input type="checkbox"/> Box No. II Priority <input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability <input type="checkbox"/> Box No. IV Lack of unity of invention <input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement <input type="checkbox"/> Box No. VI Certain documents cited <input type="checkbox"/> Box No. VII Certain defects in the international application <input type="checkbox"/> Box No. VIII Certain observations on the international application 		
Date of submission of the demand 04.08.2005	Date of completion of this report 06.09.2005	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Serrano Funcia, J Telephone No. +49 89 2399-5846	
		

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INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY

International application No.
PCT/US2005/000695
AP20 Rec'd PCT/PTO 13 JUN 2005

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
 - This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:
 - international search (under Rules 12.3 and 23.1(b))
 - publication of the international application (under Rule 12.4)
 - international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

Description, Pages

1-3, 5, 6 as originally filed
4 received on 05.08.2005 with letter of 05.08.2005

Claims, Numbers

1-7 received on 05.08.2005 with letter of 05.08.2005

Drawings, Sheets

1/5-5/5 as originally filed

- a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. The amendments have resulted in the cancellation of:
 - the description, pages
 - the claims, Nos.
 - the drawings, sheets/figs
 - the sequence listing (*specify*):
 - any table(s) related to sequence listing (*specify*):

4. This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- the description, pages
- the claims, Nos.
- the drawings, sheets/figs
- the sequence listing (*specify*):
- any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-7
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-7
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-7
	No:	Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

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Re Item V:

- 1 With respect to independent claim 1

Document D1, which is considered to be the closest prior art discloses:

"A press-contacting conductive terminal device, comprising:
a non-conductive enclosure (10) defining a cylindrically shaped through hole (11), a front end and a rear end of the through hole having a first opening (111) and a second opening (112), respectively;
at least one contact member (30) having a front end portion (31) and a rear end portion (32), an outside diameter of the rear end portion being slightly larger than an outside diameter of the front portion, the rear end portion being slideably received in the through hole;
at least one resilient member (40), being received in the through hole (11), one end thereof abutting against the rear end portion (32) of the contact member (30) and causing the front end portion (31) of the contact member to extend through the first opening (111) and beyond a front end of the non-conductive enclosure (10), a stop portion (113) placed on the first opening (111) of the non conductive enclosure to prevent the rear end (32) of the contact member from moving out of the through hole (11);
at least one base (20), including two side wings (21) and a contact portion (22), the side wings extending together from the contact portion (22)"

from which the subject matter of independent claim 1 differs in that

"the side wings have a planar surface a portion of which is tangent to an inner surface of the cylindrically shaped through hole (11), the contact portion (22) completely covering the second opening (112) on the rear end of the through hole (11) when the base is inserted into the rear end of the non conductive enclosure; the rear end (32) of the contact member (30) located between the two side wings (21) of the base with an outer wall of the rear end (32) of the contact member (30) sliding in continuous electrical contact with an inner wall of the two side wings (21)"

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These features solve the problem of providing a better electrical connection between the front end portion and the rear end portion of the press-contacting conductive terminal device and as well assuring a reliable mechanical connection of said conductive device with the insulation housing while preventing the need of a large amount of material to manufacture the contact.

There is no hint in the prior art on how to solve this problem.

The subject matter of independent claim 1 is new and inventive. (Article 33(2) and (3) PCT).

2. With respect to the dependent claims.

Claims 2-7 are dependent claims and refer to further developments on the subject matter of claim 1, and therefore comply with the requirements of Articles 33(2) and (3) PCT.

3. The subject matter of the present application refers to press-contacting conductive terminal device which has clearly an industrial applicability.

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DETAILED DESCRIPTION OF THE INVENTION:

Referring to FIGS. 4 to 9, the present invention relates to a press-contacting conductive terminal device. The conductive terminal device comprises a non-conductive enclosure 10, at least one base 20, at least one contact member 30, and at least one resilient member 40. The non-conductive enclosure 10 defines at least one cylindrically shaped through hole 11. The through hole 11 extends from a front end through a rear end of the non-conductive enclosure 10. The through hole 11 has a first opening 111 at the front end of the non-conductive enclosure 10 and a second opening 112 at the rear end of the non-conductive enclosure 10. An inner diameter of the first opening 111 is less than that of the through hole 11. A stop portion 113 is thereby defined by the first opening 111 shrinking abruptly to prevent the rear end 32 of the contact member 30 from moving out of the through hole 11. The stop portion 113 is integrally formed with the non-conductive enclosure 10 at the front end of the non-conductive enclosure 10, so as to easily control the size of the aperture diameter of the first opening 111.

The contact member 30 is made of a metal material with good conductivity, and is received in the through hole 11. The contact member 30 is configured to be hollow or solid. The contact member 30 consists of a front end portion 31 whose outside diameter is less than the inside diameter of the first opening 111 and a rear end portion 32 whose outside diameter is larger than the inside diameter of the first opening 111 while less than the inside diameter of the through hole 11. This will allow the contact member 30 to freely move within the through hole 11 of the non-conductive enclosure 10. The rear end portion 32 of the contact member 30 is disposed in the through hole 11, and the front end portion 31 of the contact member 30 extends through the first opening 111 and beyond the front end of the non-conductive enclosure 10.

The resilient member 40 is a compressive spring, made of a conductive material, and is disposed in the through hole 11. One end of the resilient member 40 abuts against the inner portion of the contact member 30 and the other end of the resilient member 40 abuts against the contact portion 22 of the base 20. An electrical connection is made

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CLAIMS:

1. A press-contacting conductive terminal device, comprising:

a non-conductive enclosure (10) defining a cylindrically shaped through hole (11), a front end and a rear end of the through hole having a first opening (111) and a second opening (112), respectively;

at least one contact member (30) having a front end portion (31) and a rear end portion (32), an outside diameter of the rear end portion being slightly larger than an outside diameter of the front portion, the rear end portion being slideably received in the through hole;

at least one resilient member (40), being received in the through hole (11), one end thereof abutting against the rear end portion (32) of the contact member (30) and causing the front end portion (31) of the contact member to extend through the first opening (111) and beyond a front end of the non-conductive enclosure (10), a stop portion (113) placed on the first opening (111) of the non conductive enclosure to prevent the rear end (32) of the contact member from moving out of the through hole (11);

at least one base (20), including two side wings (21) and a contact portion (22), the side wings extending together from the contact portion (22) and having a planar surface a portion of which is tangent to an inner surface of the cylindrically shaped through hole (11), the contact portion (22) completely covering the second opening (112) on the rear end of the through hole (11) when the base is inserted into the rear end of the non conductive enclosure;

the rear end (32) of the contact member (30) located between the two side wings (21) of the base with an outer wall of the rear end (32) of the contact member (30) sliding in continuous electrical contact with an inner wall of the two side wings (21).

2. A press-contacting conductive terminal device as claimed in claim 1, wherein the stop portion (113) is integrally formed with the non-conductive enclosure.

3. A press-contacting conductive terminal device as claimed in claim 2 wherein the stop portion (113) is an inner diameter of the first opening (111) of the non conductive housing (10) being smaller than the outer diameter of the rear portion (32) of the contact member (30) while the outer diameter of the front portion (31) of the contact member is smaller than the inner

diameter of the first opening.

4. A press-contacting conductive terminal device as claimed in claim 1, wherein the non-conductive enclosure (10) defines two slots (114), at two sides of the through hole, extending along an axial direction of the through hole, and adjacent to the second opening (112), each side wing (21) of the base (20) corresponding to and insertable into a respective inner slot (114).

5. A press-contacting conductive terminal device as claimed in claim 4, wherein two side wings (21) of the base (20) respectively form a plurality of interfering portions (23) to be interferingly engaged within the slots (114).

6. A press-contacting conductive terminal device as claimed in claim 1, wherein the two side wings (21) extend from the first opening (111) into the through hole a length at least as long as the rear end (32) of the contact member (30) slides within the through hole (11).

7. A press-contacting conductive terminal device as claimed in claim 1, wherein the resilient member (40) is a spring.